REMARKS

This Amendment responds to the Office Action dated May 12, 2004 in which the Examiner rejected claims 7-9 under 35 U.S.C. §112, first paragraph, and rejected claims 1, 3 and 5-9 under 35 U.S.C. §103.

As indicated above, claims 7-9 have been amended in order to broaden the claims. Applicants respectfully submit that the rejection to the claims under 35 U.S.C. §112, second paragraph, no longer applies. In particular, applicants respectfully submit that paragraphs 0011, 0064, 0068 and 00137 describe the rack moving vertically, while Figure 9 shows arrow 29 also showing movement along one axis. Therefore, applicants respectfully request the Examiner withdraws the rejection to claims 7-9 under 35 U.S.C. §112, first paragraph.

Claims 1, 5 and 6 claim a manufacturing apparatus comprising a sheet supplier including a plurality of trays, a rack for vertically aligning the plurality of trays, a tray drawing device for drawing trays from the rack according to a predetermined order, rails arranged to guide a tray drawing operation of the tray drawing device and a drive for driving the rack to be raised and lowered in a vertical direction. Also included are a laminator, a conveyor and a processor unit.

Through the structure of the claimed invention having a sheet supplier including a) a plurality of trays, b) a rack for vertically aligning the plurality of trays, c) a tray drawing device, d) rails and e) a drive for driving the rack to be raised and lowered in a vertical direction as claimed in claims 1, 5 and 6, the claimed invention provides a manufacturing apparatus having an efficient layout area while having a simple construction. The prior art does not show, teach or suggest the invention as claimed in claims 1, 5 and 6.

Claims 1, 3 and 5-9 were rejected under 35 U.S.C. §103 as being unpatentable over *Yoshimura* (Japanese Reference No. 4-239604) in view of *Takane et al* (Japanese Reference No. 10-321457) and *Baccini* (U.S. Patent No. 6,109,323).

Applicants respectfully traverse the Examiner's rejection of the claims under 35 U.S.C. §103. The claims have been reviewed in light of the Office Action, and for reasons which will be set forth below, applicants respectfully request the Examiner withdraws the rejection to the claims and allows the claims to issue.

Yoshimura appears to disclose in Figure 1, tray 11, absorbing head 12, and lamination station 13. In the tray 11, the same kind of several ceramic green sheets 16 is housed in a laminated state. The absorbing head 12, as shown by an arrowhead 20, is moved between the tray 11 and the lamination station 13. In other words, as shown on the left of Figure 1, when the absorbing head 12 is positioned above the tray 11, it is displaced downward until the absorbing head contacts with the uppermost green sheet of the ceramic green sheets 16 in the tray 11. At that time, since a vacuum suction is given via the suction holes 17, the uppermost sheet of the ceramic green sheets 16 is adsorbed to the absorbing head 12 by the vacuum suction. Then the absorbing head 12, as shown by an arrowhead 20, is positioned above the lamination station 13 and further displaced downward. Then, the vacuum suction given via the suction holes 14 is released, and the ceramic green sheets 16 absorbed by the absorbing head 12 are placed on the lamination station 13. As shown in Figure 4, several trays 11A, 11B, 11C, 11D, ..., and 11E are arranged, and each same kind of ceramic green sheets 16A, 16B, 16C, 16D, ..., and 16E is housed in a laminated state in each of the trays 11A-11E. Then, using the absorbing head

12 shown in Figure 1, as shown by the arrowhead in Figure 4, the ceramic green sheets 16-16E are absorbed in a prescribed sequence form several trays 11A-11E and transferred up to the lamination station 13, and the ceramic green sheets 16 are laminated on the lamination station.

Thus, *Yoshimura* merely discloses several trays 11 arranged in a plane. Nothing in *Yoshimura* shows, teaches or suggests a rack for vertically aligning a plurality of trays as claimed in claims 1, 5 and 6. Rather, *Yoshimura* merely discloses trays 11 arranged in a plane.

Additionally, *Yoshimura* merely discloses an absorbing head 12 moved between the trays to a lamination station 3. Nothing in *Yoshimura* shows, teaches or suggests a tray drawing device for drawing trays from a rack as claimed in claim 1. Rather, *Yoshimura* merely discloses an absorbing head 12 which moves between the plurality of trays.

Additionally, since nothing in *Yoshimura* shows, teaches or suggests a rack for vertically aligning the trays or a tray drawing device for drawing the trays from the rack, nothing in *Yoshimura* shows, teaches or suggests rails arranged to guide a tray drawing operation of the tray drawing device as claimed in claims 1, 5 and 6.

Finally, since nothing in *Yoshimura* shows, teaches or suggests a rack for vertically aligning the plurality of trays, nothing in *Yoshimura* shows, teaches or suggests a drive for driving the rack to be raised and lowered in a vertical direction as claimed in claims 1, 5 and 6.

Takane et al appears to disclose green sheets 10 with the substrate film formed with a variety of print patterns are stored in a large quantity into magazine 31 shown in Figure 4 according to each pattern. Once a prescribed number of green

sheets 10 with the substrate film of the kinds required for making a ceramic multilayered component are all stored into magazine 31, said magazine is set to sheet feeding device 30. Sheet feeding device 30 is configured with sheet stocker 32 and sheet unloading device 33. Sheet stocker 32 has many shelves for storing magazines 31. In the present example, they are provided in 3 stages vertically and in 8 rows concentrically in the perimeter direction, and the center shaft is linked to a motor via an attenuator. In addition, sheet unloading device 33 is configured with hoisting device 34 provided outside of sheet stocker 32 and a sheet drawing device 35 mounted on its hoisting saddle which are provided parallel to the storage shelves arranged vertically. Sheet feeding device 30 is capable of storing 24 magazines 31 (31a, 31b, ...), that is, up to 24 kinds of sheets, unloading the sheets from magazines 31 according to a prescribed layering order using the combination of the rotating operation of sheet stocker 32 and the hoisting operation of sheet unloading device 33, and supplying them to layering device 20. Sheets, such as a polyethylene terephthalate sheet or an expanded adhesive sheet which can be peeled off by applying heat, serving as the base for layering (will be referred to as base sheet, hereinafter) are stored in first magazine 31a of sheet feeding device 30 in advance. Sheet feeding device 30 rotates sheet stocker 32 to the position where first magazine 31a faces sheet unloading device 33, and the hoisting device of sheet unloading device 33 moves to the height where it meets the first slot of first magazine 31a. Sheet drawing device 35 draws 1 sheet from the slot by grabbing the side right in front of it in order to unload it from magazine 31a. Said drawn base sheet is vacuum-sucked by vacuum suction head 37 of sheet inverting-mounting

mechanism 36, rotated by 180°, and inverted. The inverted base sheet is mounted onto lower mold 21 by carrier machine 27.

Thus, *Takane et al* merely discloses green sheets stored in slots of a magazine 31. Nothing in *Takane et al* shows, teaches or suggests a plurality of trays and a rack for vertically aligning the trays as claimed in claims 1, 5 and 6. Rather, *Takane et al* merely discloses magazines 31 containing a plurality of slots for storing green sheets.

Also, *Takane et al* merely discloses a sheet stocker 32 which is rotated by a sheet feeding device 30. Nothing in *Takane et al* shows, teaches or suggests a drive for driving a rack to be raised and lowered in a vertical direction as claimed in claims 1, 5 and 6. Rather, *Takane et al* merely discloses rotating the sheet stocker 32 by a sheet feeding device 30.

Furthermore, *Takane et al* merely discloses a sheet drawing device 35 which draws one sheet from a slot by grabbing the side of the sheet in front of it in order to unload the sheet from the magazine. Thus nothing in *Takane et al* shows, teaches or suggests a tray drawing device for drawing trays from the rack as claimed in claims 1, 5 and 6. Rather, the sheet drawing device 35 of *Takane et al* grabs a sheet from a slot in order to unload it.

Additionally, *Takane et al* merely discloses that the sheet drawing device 35 is moved to the height of the first slot via a hoisting device of the sheet unloading device 33. Thus nothing in *Takane et al* shows, teaches or suggests rails arranged to guide a tray drawing operation of the tray drawing device as claimed in claims 1, 5 and 6. Rather, *Takane et al* merely discloses vertically moving a hoisting device so that the sheet drawing device 35 can draw a sheet from a slot of a magazine.

Finally, *Takane et al* merely discloses a sheet stocker 32 having shelves for storing the magazines 31. Nothing in *Takane et al* shows, teaches or suggests a plurality of trays and a rack for vertically aligning the plurality of trays as claimed in claims 1, 5 and 6. Rather, *Takane et al* merely discloses a sheet stocker 32 storing magazines 31 containing slots for holding the green sheets.

Baccini appears to disclose a device to withdraw, superimpose and anchor foils for green-tape circuits. (col. 1, lines 8-10) A device suitable to withdraw, one by one in a pre-set sequence, supports in the form of plates, each of which supports a thin foil of the type employed in green-tape circuits; these supports are arranged in appropriate containers positioned substantially side by side and each container is characterised by holding a particular type of green tape foil. (col. 1, lines 13-19) The device therefore conveys the supports and the relative green-tape foils to at least one alignment station so as to position the green-tape foils correctly in view of a subsequent superimposing of the foils on each other so as to form a multi-layer pack. The green-tape foils thus superimposed in a well defined order and forming a multi-layer pack are then anchored together to form one single whole, for instance by adhesives, or advantageously, but not only, by the anchorage system, or by a microwave welding system, or by an ultrasonic welding system, or else by any other anchorage system suitable for the purpose. (col. 1, lines 33-45) The device includes means able to withdraw in sequence in a pre-set manner a required plurality of supports with their relative green-tape foils; each support is taken from a specific container. (col. 2, lines 31-34)

Thus, *Baccini* merely discloses an automated device to withdraw, superimpose and anchor green tape foils in a set order. Nothing in *Baccini* shows,

teaches or suggests a sheet supplier including a) a plurality of trays, b) a rack for vertically aligning the plurality of trays, c) a tray drawing device for drawing trays from the rack, d) rails arranged to guide a tray drawing operation of the tray drawing device and e) a drive for driving the rack to be raised and lowered in a vertical direction as claimed in claims 1, 5 and 6. Rather, *Baccini* merely discloses an automated device to withdraw, superimpose and anchor green tape foils in a set order.

A combination of *Yoshimura*, *Takane et al*, and *Baccini* would merely suggest to place the individual tray trays of *Yoshimura* on the rotatable sheet supplier of *Takane et al,* to use the absorbing head 12 of *Yoshimura* in order to pick up the sheets from the trays stored in the rotatable sheet supplier of *Takane et al* while automating the device as taught by *Baccini*. Thus, nothing in the combination of the references shows, teaches or suggests a sheet supplier including a) a plurality of trays, b) a rack for vertically aligning the plurality of trays, c) a tray drawing device for drawing trays from the rack, d) rails arranged to guide a tray drawing operation of the tray drawing device and e) a drive for driving the rack to be raised and lowered in a vertical direction as claimed in claims 1, 5 and 6.

Finally, applicants respectfully traverse the Examiner's combination of the references. Nowhere in *Takane et al*, *Yoshimura* or *Baccini* is it shown, taught or suggested that the trays of *Yoshimura* would need a tray drawing device for drawing the trays from a rack. Rather, the combination of *Yoshimura* and *Takane et al* would merely suggest to store each tray on the shelves of the sheet stocker 32 of *Takane et al*. Furthermore, since neither *Yoshimura* nor *Takane et al* shows, teaches or suggests a tray drawing device, even assuming *arguendo* the references could be

combined, no such tray drawing device is shown, taught or suggested. Applicants respectfully point out that sheets are picked up by the absorbing head in *Yoshimura* while in *Takane et al* the slots are grabbed by a front edge of the sheet drawing device from a slot. Thus, no tray drawing device is shown, taught or suggested by either reference. As a result, no rails for guiding a tray drawing device are shown, taught or suggested.

Applicants additionally traverse the Examiner's statement that "either the tray drawing device needs to be movable... or the vertical rack must be moved" are alternate expedients. Applicants respectfully point out that no tray drawing operation is shown, taught or suggested by any of the references. Furthermore, the sheet stocker 32 in *Takane et al* is rotatable but not vertically movable.

Since nothing in the combination of *Yoshimura, Takane et al* and *Baccini* shows, teaches or suggests a sheet supplier including a plurality of trays, a rack for vertically aligning the plurality of trays, a tray drawing device, rails arranged to guide a tray drawing operation of the tray drawing device and a drive for driving the rack to be raised and lowered in a vertical direction as claimed in claims 1, 5 and 6, applicants respectfully request the Examiner withdraws the rejection to claims 1, 5 and 6 under 35 U.S.C. §103.

Claims 3 and 7-9 depend from claims 1, 5 and 6 and recite additional features. Applicants respectfully submit that claims 3 and 7-9 would not have been obvious within the meaning of 35 U.S.C. §103 over *Yoshimura*, *Takane et al* and *Baccini* at least for the reasons as set forth above. Therefore, applicants respectfully request the Examiner withdraws the rejection to claims 3 and 7-9 under 35 U.S.C. §103.

Thus it now appears that the application is in condition for reconsideration and allowance. Reconsideration and allowance at an early date are respectfully requested.

If for any reason the Examiner feels that the application is not now in condition for allowance, the Examiner is requested to contact, by telephone, the applicants' undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed within the currently set shortened statutory period, applicants respectfully petition for an appropriate extension of time. The fees for such extension of time may be charged to our Deposit Account No. 02-4800.

In the event that any additional fees are due with this paper, please charge our Deposit Account No. 02-4800.

Respectfully submitted,

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Date: June 14, 2004

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